DAILY CHEMICAL QUALITY CONTROL REPORT

DAY	S	M	T	W	TH	F	S
DATE				09/06/17			3
							
LICA OF DEPART							
USACE REPRE	SENTATIVE:		Rodney Zion				
PROJECT:		Bunker Hill C	entral Treatment Plan	at Operations			
			The state of the s	it Operations			
CONTRACT NO	D:	W912DW-16	-C-0012		05/03/17 - 05	5/03/18	
		WEATHER	Clear & Sunny	Partly Cloudy	1 0	- n · 1	
		WEATHER	X	Fairly Cloudy	Overcast	Rain	Snow
97		TEMP	0-32	32-50	50-70	70-90	90-103
		WIND	Low	Moderate	High	70-20	70-103
		HUMIDITY	Low .	Moderate	High		
	Subcontractor Person						
NAME Gary Fulton	TRADE Lead Operator	HOURS 8	EMPLOYER Ferg. Cont.	LOCATION &	& DESCRIPTI	ON OF WOR	K
Steve Brunner	CTP Operator	8	Ferg. Cont.	CTP O&M, LW7		Lab Data Review	, DMR
Gary Coast	CTP Operator	8	Ferg. Cont.	CTP Operator,			
Rod Zion	USACE COR		USACE	CTP Site	CII OUN		
Ken Parsons	USACE QAR/PE		USACE	CTP Site,			
Don Ferguson	Contract Mgr	1	Ferg. Cont.	CTP site, week	ly conference ca	all	
Spencer Archer	O&M Manager		Amec F.W.	CTP Site			
Steve Brunner	CTP Operator	2	Ferg. Cont.	Operator Overti	ime, Auto-Dial	er Call Out 17:5	55
Gary Fulton	Lead Operator		Ferg. Cont.	CTP Site,			· · · · · · · · · · · · · · · · · · ·
Gary Coast	CTP Operator		Ferg. Cont.	CTP Site, Over			Motor
Ryan McCune	Instrument Tech		Big Sky Ind.	CTP, Aeration			
Mike Wright	Electrician	ļ	Fuse Electric LLC	CTP Site, Silo	A Dust Collection	on System - ON	ÆR #011
	oliday Man Hours:	HOURE					
NAME	Explanation	HOURS	Ferg. Cont.	Non Exposure	Hausa da nat	in also de sociéle e	
	 	 	reig. com.	Ivon Exposure	mours, do not	include with e	xposure ars.
L		1				************	
2. Work Perfor	med:						
Process quality co	ontrol monitoring, flo	c mixing, lime s	ystem maintenance,	and plant inspection	ons as reported l	below.	
Performed all req	uired CTP daily proce	ess operations to	esting and sample col	lection.			
	ily inspection of the li			bserved no visual	changes to the	exterior of the ta	ınk.
	tem waste grit bin into						
	samples from 006 ou			or 24 hour rush and	alysis.		
	enance inspection of I esponded to auto-diale			from 760 cmm to	nnrovimetaly 2	1020 cmm	
	rovided notification the						SEE ALL
	of 1440 gpm at this to		poor pump was mota	ned. The new man	te poor pump is	pathping at	
	ill monitor the Clarifie		s closely for the next	few days as floce	ulent dosage ma	ay need to be in	creased
in response to the	additional mine pool	pump flow. As	ny flocculent dosage	changes will be re	ported to Amec	F.W. managem	ient.
							<u> </u>
2 Omelity Co.	N	mad.					
	rol Activities Perfor daily cleanings of the		nH probe to prevent	colide huildun			
	on Basin discharge gr				pH prohe 8 50	grab @ 05:40	
Performed Aerati	on Basin discharge gr	ab pH test to ve	rify pH probe and m	eter readings 8.47	pH probe, 8.50	grab @ 13:00	
				××			

DAILY CHEMICAL QUALITY CONTROL REPORT

DAY	S	M	T	W	TH	F	9
DATE					09/07/17		3

USACE REPRESENTATIVE:

Rodney Zion

PROJECT:

Bunker Hill Central Treatment Plant Operations

CONTRACT NO:

W912DW-16-C-0012

05/03/17 - 05/03/18

WEATHER	Clear & Sunny X	Partly Cloudy	Overcast	Rain	Snow
TEMP	0-32	32-50	50-70	70-90	90-103
WIND	Low	Moderate	High	L	
HUMIDITY	Low	Moderate	High		

1. Contractor/Subcontractor Personnel and Areas of Responsibility:

NAME	TRADE	HOURS	EMPLOYER	LOCATION & DESCRIPTION OF WORK
Gary Fulton	Lead Operator	8	Ferg. Cont.	CTP O&M, LWTPO, CQC Mgr, Lab Data Review, DMR
Steve Brunner	CTP Operator	8	Ferg. Cont.	CTP Operator, CTP O&M
Gary Coast	CTP Operator	8	Ferg. Cont.	CTP Operator, CTP O&M
Rod Zion	USACE COR		USACE	CTP Site
Greg Zoeller	USACE QAR		USACE	CTP Site,
Don Ferguson	Contract Mgr		Ferg. Cont.	CTP site, weekly conference call
Spencer Archer	O&M Manager		Amec F.W.	CTP Site
Steve Brunner	CTP Operator		Ferg. Cont.	Operator Overtime,
Gary Fulton	Lead Operator	Lancation to the same and	Ferg. Cont.	CTP Site,
Gary Coast	CTP Operator	1	Ferg. Cont.	CTP Site, Overtime OMER #11 Silo A Dust Motor
Ryan McCune	Instrument Tech		Big Sky Ind.	CTP, Aeration Basin pH Meter
Mike Wright	Electrician	2	Fuse Electric LLC	CTP Site, Silo A Dust Collection System - OMER #011
Vacation and H	oliday Man Hours:			
NAME	Explanation	HOURS		
			Ferg. Cont.	Non Exposure Hours, do not include with exposure hrs.

2. Work Performed:

Process quality control monitoring, floc mixing, lime system maintenance, and plant inspections as reported below.

Performed all required CTP daily process operations testing and sample collection.

Performed the daily inspection of the lime slurry holding tank. Operators observed no visual changes to the exterior of the tank. Emptied lime system waste grit bin into CIA sludge waste pond.

CTP operators removed the failed dust system A motor, transferred the mounting unit from the failed motor to the new motor and installed the new motor. The electrician performed electrical disconnects and new motor connections. Electrician tested the motor connections and the operators tested the new dust system motor. The second motor is not operating correctly.

The dust motor manufacturer has been contacted. #1 failed motor was delivered to the manufacturers repair rep for inspection.

Cleaned and inspected the KT flume and trash racks. Operators removed a small amount of wood debris from the tracks.

KT flow at this time is 2.73 MGD (1895 gpm) with a pH of 2.85. Mine pool pump is now pumping approximately 1135 gpm.

Performed weekly discharge sampling a the KT and the PTM outfall. PTM discharge flow is 7 gpm with a pH of 6.35.

CTP operating staff reviewed and discussed the current AQI level of 206. The AQI is considered unhealthy. Limited exposure to the fire smoke will be implemented.

Updated the monthly DMR to include the recent 006-09-04-17 lab data. Lab data is attached.

Flocculent dosage is currently 1.50 ppm due to the increased KT flow from 760 gpm to 1895 gpm.

3. Quality Control Activities Performed:

Performed twice daily cleanings of the Aeration Basin pH probe to prevent solids buildup.

Performed Aeration Basin discharge grab pH test to verify pH probe and meter readings 8.44 pH probe, 8.41 grab @ 05:45.

Performed Aeration Basin discharge grab pH test to verify pH probe and meter readings 8.53 pH probe, 8.58 grab @ 13:00.

15 days Flow

																E	Bunk	er Hi	II Cei	ntral Tr	eatme	ent Pl	ant	*********										
E L							***************************************											Daily	log !	Septem	ber 2	017			***************************************									
					AED	ATION	BASIN		T		CLA	RIFIER						DISC	CHARG	= 006			DEC	YCLE SO	T	LIMES	LIDDY	CLUD	SE PUMP	POND	DUMD	euloce	CUN TEST	LINED POND
		INFLUE	NTKT			.m.		o.m.	+	a.m.	DLA			Γ	а	.m.	Т	p.m.		1/wk	T	T	- NEO	T		LIVIL O	Injection Valve		. 600gpn		- Olvir	SLODGL	GONTEGI	ESTIMATED
	Operators	GPM	pН	SET	pH1	grab	pH1	grab	pH2	2 grab	pH2		TURB							TEMP										ON	OFF	10' Out	20' Out	Elevation (mg)
9/1	GC			8.5						8.3			0.40	53 54				7.1		-	0.38		1.040			10.0	262/25 264/25	3	60	 				2268.5 (.75mg) 2268.5
9/3			-	8.5						8.2								7.4						7 400			221/25	3	60		-			2268.5
9/4		757	2.86		8.6	8.7	8.5	8.6	8.3	8.3	8.2	8.3	0.50	53	7.0	7.3	7.0	7.3			0.46	1.08	1.034	4 400	1.065	10.1	243/25	3	60					2268.5
	GF,SB,GC			8.5		8.5		8.5		8.6		8.2	0.40	54	7.0						0.30		1.03				275/25	3	60		1			2268.5
	GF,SB,GC	1895	705	8.5	8.5					7.9			0.46	55		7.3		7.2		6.8	0.38		1.039				238/25 114/35	3	120		-			2268.5 2268.5
	GF,SB,GC GF,GC	1000	2.00	8.4						8.2			0.70	57				7.3		_			1.059				157/35	3	120		+	-		2268.5
9/9				8.4						8.0			0.92	56	7.1	7.3	7.5	7.4			0.70	2.66	1.056	400	1.064	10.0	168/35	3	120			10'-12"	20'-9"	2268.5
9/10				8.4						8.0								7.4					1.05					3	120					2268.5
	GF,SB	1835	2,90			8.4				8.2				57	7.3			7.3					1.05				156/35 153/35	3	120					2268.5 2265.5
	GF,SB,GC GF,SB,GC			8.4				8.5		8.2					7.3					7.0	1.23	2,48	1.05	3 400	1.065			3	120	+				2268.5
	GF,SB,GC	1895	2.90							8.2			1.46	56						1	1.56	2.36	1.052	400	1.065	10.1	160/35	3	120					2268.5
9/15	GF,GO			8.4						8.2								7.1					1.05				163/35	3	150					2268.5
9/16	GC	-		8.5						8.0				53				7.3		-			1.050				160/35 167/35	3	120		-			2268.5 2268.5
9/17	GF,8B	1875	3.00	8.4						8.0					7.4			7.4						1 400			171/35	3	120					2268.5
	GF,SB,GC	1075	3,08	8.4				8.4		7.9				52				7.3		+			1.05				166/35	3	120	 	 	 	<u> </u>	2268.5
9/20	GF,8B,GC			8.4		8.4	8.6	8.6	8.0	7.9	7.9	7.8						7.2		6.9c	1.37	2.56	1.05	7 400			164/35	3	120					2269.0 (1.0mg)
	GF,\$B,GC	1812	3.18							7.9				52				7.4					1.052		1.066		153/35	3	120					2269.0
	GF,GC		-	8.4				8.4		8.0			1.25	50 54				7.2					1.056	3 400			166/35 157/35	3	120		-			2269.0 2269.0
9/23								8.5		8.0					8.0			7.3					1.050				163/35	3	120					2269.0
	GF,GC	1810	3.20					8.4		8.0				54							1.22			400			167/35	3	120	 	1			2269.0
9/26	GF,SB,GC			8.4	8.4	8.4	8.4	8.5	7.9	8.0	7.9	7.8	1.23			7.3						2.44	1.048	400	1.065		172/35	3	120					2269.0
	GF,SB,GC									8.1						7.3				7.5c							170/35	3	120			10'-12"	20'-11"	2269.0
	GF,SB,GC GF,GC	1805	3.00	8.6				8.6		8.0							7.9						1.05			10.1	171/35 146/35	3	125 90	 		10'-8"	20'-8"	2269.0 2269.0
9/30			-							7.9						7.5				+			1.05		1.065		150/35	3	150			10-6	20-0	2269.0
0,00	00			0.0	0.0	0.0	+ 0.4	1	1	1.0	1.0	7.0	7.00	1	7.0	1,.0	1	1,,,,			1.00		1.00	1	1	1	100.00	1	1	1	1			2237,0
-																			1/w	1/wk														
						0.40	1		-		- 10	7.00	4		7 10	7.00	-	7.0	7 000		1 11	1000	100						400		-	-		
Average	96:			8.44	8.44	8,46	8.46	8.46	8.12	2 8.07	8.10	7.99	1.70	54.47	7.42	7.28	7.5	7.2	PPI	/ *c	1.44	2.20	1.05	4	-	-			109	-	-	-		
Notes				-		-	-	-	-		-	-	-		-	-	+	-	-	-	-	-	+		-	-			327	5		-		
	09-06-17 17:	55 Opera	tor res	nonde	to aut	o-diale	er call o	ut KT	flow in	creased	from 76	O apm t	o appro	ximately	2020	apm. (1	1260 a	pm pun	no). Ph	set point	decreas	ed from	8.50 to	8.40.	Algies			 	- Landan Marian	Gallons	1	 		
	09-07-17 10:											30	o appio	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		35		P.1.1	.E/	positi				N/P	4							-	-	
	09-09-17 06:	30 Recal	ibrated	Aerat	on Bas	in pH	probe to	sampl	e grab.	. 8.41 to	8.31																							
	09-13-17 12:																	1 8.40 -	low flow	duration	is unkno	wn.												
	09-13-17 17:0															.50 to 8.	40.					**********						-	-		-			
	09-20-17 10:	30 KT flo	w decr	eased	from a	pproxir	nately 1	1875 to	approx	ximately	750 gpr	n. Incre	eased pl	d set po	int fron	n 8.4 to	8.5 du	iring the	e low flo	w period.								1						
-	09-20-17 13:	30 KT flo	w incre	ased t	rom ap	proxim	ately 7	50 gpm	to 181	12 gpm.																								1/2
	09-28-17 08:																DOMAN										T							
	09-29-17 08:													o pump	setting	(1.00	rrivi).											+	 	+				
	09-29-17 19:													06:00	n 09-3	10-17															1			
		-																																
-																		*********			******					~~~~~	*****************						-	
							********																					-	-	-				

GPM 1822 09-08-17 ap. 517.6C Weather PCloudy - 60-850	COS 10892	20mple: CCO - 64-05-17 1sh 76 CM CG MM CDG-08-17 753 Ph	1	13:00 8.59/8.55 8.36 7.34/7.38	Torbielity Time classifica add	0.55	Sk	1	2+th. 8/ Th. 570	Kr min (2) 6.1. 24 1135 about 12 (fm						
GPM 2086 09-07-17 075566-58	Two 06,00 000 Plew 1,963,000	PH Time Acration Clariffor COL	-	Clarifie	35.0	Spulle Garity Time SG 06:16 08:16	1700 00:31	Clorition 3-12/12/55 0400000		Kellog Tunn	15-04-07-17 (JAMES) PP CA CO ME	Time 16:30 Pin Oschada # 6 435 DH	Single PTM - 69-07-17 WE DO ZKCC	(+hall),	. OR-07-17 TSS PL	2000 - 100 - 100 - 100 - 100 (1/35 grm)

GM 765 09-06-17 00.85 SBGC		200 to 1,000 to 1,000 to 1,000 to 1,000	•	110 PC 1 1 - 02 10 - 000	DH'S - Time Aer. CL. 006	1	Turbidity Time CL. On6	94.0 54.50	18:15	SC- ON	17.55 1.037 06.17 0 1:13		,50 ta	1,063 8 9.8	20 H 14,1 15 16,5	Call out 17:55 Line Free close time Low Man	is open time at 30 sec.	1850 to 200 gom (12 led GPM AUMIN +	
CPM 800.750 09-05-17 CPM	Weether clear 60-90" 1069400		0415. Time Acr. CL. 006 05.55 650/854 820/956	1 300	900	1310 0.40 0.30	Time SE ON	65:45 1,037 06:20 07:20	12,30 1.03/	540	1.064 & 10,0 U. 5.3 Sec.	5,6 A 146 B 16.3							



www.svl.net

One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

AMEC Foster Wheeler (CA)

10940 White Rock Rd, Suite 190 Rancho Cordova, CA 95670

Work Order:

Project Name: Bunker Hill 2017 - BHCTP X7I0045

Reported:

18-Sep-17 12:28

Client Sample ID: KT-09-04-17

SVL Sample ID: X710045-01 (Water)

Sample Report Page 1 of 1

Sampled: Received:

04-Sep-17 07:35 05-Sep-17

Sampled Ry SB

-		•			1 1	0		Sampi	Ca Dy. GD	
Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total Re	ecoverablereportable as	Total per 40 CI	FR 136)							
EPA 200.7	Cadmium	0.240	mg/L	0.0020	0.0004		X737018	AS	09/18/17 09:31	
EPA 200.7	Lead	0.575	mg/L	0.0075	0.0026		X737018	AS	09/18/17 09:31	
EPA 200.7	Manganese	36.4	mg/L	0.0080	0.0025		X737018	AS	09/18/17 09:31	
EPA 200,7	Zinc	118	mg/L	0.100	0.031	20	X737018	AS	09/18/17 09:34	D2.
Classical Chemis	stry Parameters									
SM 2540 D	Total Susp. Solids	39.0	mg/L	5.0	0.0		X736271	PRM	09/08/17 13:05	RIB
SM 4500 H B	pH @18.3°C	2.82	pH Units				X736273	DKS	09/11/17 07:42	H5

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Ken

John Kern

Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

AMEC Foster Wheeler (CA)

10940 White Rock Rd, Suite 190 Rancho Cordova, CA 95670

Work Order:

Project Name: Bunker Hill 2017 - BHCTP X7I0045

Reported:

18-Sep-17 12:28

Client Sample ID: KT-09-07-17

SVL Sample ID: X7I0045-02 (Water)

Sampled: Received:

07-Sep-17 10:45 05-Sep-17

Sample Report Page 1 of 1

1					mpre recport	- mge r or r		Sampi	ed by. SB	
Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total Re	coverablereportable as	Total per 40 Cl	FR 136)							
EPA 200.7	Cadmium	0.108	mg/L	0.0020	0.0004		X737018	AS	09/18/17 09:38	
EPA 200.7	Lead	2.53	mg/L	0.0075	0.0026		X737018	AS	09/18/17 09:38	
EPA 200.7	Manganese	114	mg/L	0.0800	0.0490	20	X737018	AS	09/18/17 09:41	D2
EPA 200.7	Zinc	71.9	mg/L	0.100	0.031	20	X737018	AS	09/18/17 09:41	D 2.
Classical Chemis	stry Parameters									
SM 2540 D	Total Susp. Solids	431	mg/L	5.0	0.0		X736271	PRM	09/08/17 13:05	
SM 4500 H B	pH @19.4°C	3.06	pH Units				X736273	DKS	09/11/17 07:44	H5

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Gen

John Kern

Laboratory Director

KELLOGG TUNNEL DISCHARGE CENTRAL TREATMENT PLANT MONTH: Sep-17

Data from SVL

DAY	LEAD	(Pb)	ZINO	(Zn)	CADMI	UM (Cd)	MANGAN	NESE (Mn)	pH s.u.	006 FLOW		TSS	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	SVL Lab	mgd	mg/L	lbs/day	kg/day
1		5.33		1,093		2.22		337.2		1.11		361.3	163.8
2		5.18		1,063		2.16		328.1		1.08		351.5	159.4
3		5.20		1,066		2.17		328.9		1.08		352.4	159.8
4	0.575	5.17	118.0	1,060	0.240	2.16	36	327.1	2.82	1.08	39	350.4	158.9
5		5.09		1,044		2.12		322.0		1.06		345.0	156.5
6		5.22		1,070		2.18		330.2		1.09		353.8	160.4
7 0	2.530	41.38	71.9	1,176	0.108	1.77	114.0	1,865	3.06	1.96	431	7050	3197
8		56.58		1,608		2.42		2,550		2.68		9639	4371
9		56.16		1,596		2.40		2,531		2.66		9567	4339
10		53.99		1,534		2.30		2,433		2.56		9197	4171
11	0.664	13.68	68.9	1,420	0.106	2.18	111.0	2,287	3.12	2.47	96	1978	897.0
12		13.96		1,449		2.23		2,334		2.52		2019	915.6
13		13.72		1,424		2.19		2,294		2.48		1984	899.6
14	0.663	13.06	69.4	1,367	0.106	2.09	112.0	2,206	3.21	2.36	86	1694	768.1
15		14.39		1,506		2.30		2,430		2.60		1866	846.2
16		14.22		1,488		2.27		2,402		2.57		1844	836.5
17		14.10		1,476	W	2.25		2,382		2.55		1829	829.4
18	0.622	12.82	69	1,412	0.102	2.10	108.0	2,226	3.23	2.47	96	1979	897.4
19		13.70		1,509		2.25		2,379		2.64		2115	959.2
20		13.29		1,463		2.18		2,307	and the second second second	2.56		2051	930.1
21	0.633	12.31	69	1,340	0.100	1.94	110.0	2,139	3.30	2.33	81	1575	714.3
22		13.31		1,449		2.10		2,313		2.52		1703	772.5
23		13.52		1,472		2.14		2,350		2.56		1730	784.8
24		13.20		1,437		2.08		2,293		2.50		1689	765.9
25	0.626	12.72	65	1,318	0.098	2.00	105.0	2,132.7	3.17	2.43	96	1949.9	884.3
26		12.75		1,321		2.00		2,138.0		2.44		1954.7	886.5
27	-trul-us revene research	12.59		1,305		1.98		2,111.7		2.41		1930.7	875.6
28	0.656	13.52	67	1,379	0.097	2.00	107.0	2,205.5	3.24	2.47	92	1896.3	860.0
29		13.36		1,362		1.98		2,178.7		2.44		1873.3	849.6
30		12.04		1,228		1.78		1,964.4		2.20		1689.0	766.0
Total	6.97	506	597	40,436	1	64	803	56,424	25	66	1,017	74,916	33,976
Sample Events	8	30	8	30	8	30	8	30	8	30	8	30	30
Daily Average	0.871	16.9	74.7	1,348	0.120	2.13	100.4	1,881	3.14	2.20	127	2497	1133

Notes:

(X mg/L) * (1 kg/10^6 mg) * (2.205 lbs/kg) * (3.785 L/gal) * (10^6 gal/Mgal) * (Y Mgal/day) = (X) * (Y) * (8.345) lbs/day (X lbs/day) * (1 kg/2.205 lbs) = (X) / (2.205) kg/day verified by Brian Johnson, 09/12/17